NON-PUBLIC?: N
ACCESSION #: 9004260305
LICENSEE EVENT REPORT (LER)

FACILITY NAME: VOGTLE ELECTRIC GENERATING PLANT PAGE: 01 OF 05
UNIT 2

DOCKET NUMBER: 05000425

TITLE: UNIT 2 REACTOR TRIP FROM UNIT 1 RESERVE AUXILIARY TRANSFORMER
FEEDER LINE FAULT
EVENT DATE: 03/20/90 LER #: 90-002-00 REPORT DATE: 04/19/90

OTHER FACILITIES INVOLVED: VEGP - UNIT 1 DOCKET NO: 05000424

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: R.M. ODOM, NUCLEAR SAFETY AND COMPLIANCE TELEPHONE: (404) 826-3201

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

On 3-20-90, at 0820 CST, a Unit 2 generator primary differential relay energized causing a generator trip, turbine trip, and reactor trip. The relay energized upon a phase to ground fault which occurred when a truck operator backed into a support pole for a 230kv phase C "switcher" feeder line for Unit 1 Reserve Auxiliary Transformer (RAT) A. The 230kv line came in contact with the ground causing a fault which also tripped Unit 1 RAT A and Unit 2 RAT B. Diesel Generator 2B started automatically and restored power to emergency bus 2BA03. A loss of power to certain non-1E busses resulted in a trip of Reactor Coolant Pumps 2 and 4. At 1035 CST, normal operating procedures were entered after the Unit was stabilized in Mode 3.

Although the initiating event was the truck backing into the 230kv support pole, causing a phase to ground fault, the Unit should not have tripped on the ground fault current recorded during this event. Investigation determined the cause for the actuation of the generator primary differential relay was incorrect tap settings for variable ratio current transformers located on the generator main output breakers. A contributing cause w
s the failure to test the relay to verify that it
was receiving the proper voltage and current signals from the current transformers.

The tap settings for the current transformers were corrected and the remaining protective relays will be tested to verify they are receiving proper voltage and current signals.

END OF ABSTRACT

A. REQUIREMENT FOR REPORT

This report is required per 10 CFR 50.73 (a)(2)(iv), since the event resulted in an automatic actuation of the Reactor Protection System (RPS).

B. UNIT STATUS AT TIME OF EVENT

Unit 2 was operating in Mode 1 (Power Operation) at 100% of rated thermal power. The block valve for Pressurizer Power Operated Relief Valve (PORV) 2PV-456A was closed due to PORV seat leakage. Other than this, no Unit 2 equipment was inoperable or in an off-normal status such that it contributed to the occurrence or consequences of this event.

C. DESCRIPTION OF EVENT

On 3-20-90, a truck operator, after checking the fuel level in a welding machine located in the low voltage switchyard, backed into a support pole for a 230kv phase C "switcher" feeder line for Unit 1 Reserve Auxiliary Transformer (RAT) A. The 230kv feeder line came in contact with the ground resulting in a phase to ground fault which caused a trip of Unit 1 RAT A and Unit 2 RAT B. (See Licensee Event Report 50-424/1990-006 for a discussion of the resulting effect on Unit 1). Upon the fault disturbance, a Unit 2 main generator primary differential relay (relay 587U1) energized causing a generator trip, a turbine trip, and a reactor trip at 0820 CST.

The trip of Unit 2 RAT B resulted in a loss of power to 4.16kv Train B emergency bus 2BA03. The load sequencer initiated and functioned per design to start Diesel Generator 2B and to reconnect the required Class 1E loads to 2BA03.

At the time of the generator trip, the Unit Auxiliary Transformers (UAT's) were supplying non-1E house loads. The non-1E busses supplied from Unit 2 UAT A successfully transferred per design to Unit 2 RAT A. Since RAT B was tripped, no transfer of non-1E busses to this RAT could occur. This resulted in a loss of the non-1E loads connected to these busses including Reactor Coolant Pumps No. 2 and 4.

On the reactor trip, all control rods fully inserted and a Feedwater Isolation and an Auxiliary Feedwater (AFW) actuation occurred per design. Pressurizer pressure and level and reactor coolant average temperature (Tavg) were observed to be lowering. Based on these observations, at 0822 CST, the control room operator initiated a manual Main Steam Line Isolation (MSLI) to limit the cooldown and to maintain pressurizer pressure and level. After initiation of the MSLI and throttling AFW flow to the steam generators, pressurizer pressure rose.

As pressure increased, both pressurizer spray valves received an open demand signal. However, with the loop 4 RCP off, the spray flow was being short cycled from loop 1 back to loop 4. As a result, effective pressure reduction did not occur and PORV 2PV-0455A opened and closed at 0853 CST. The highest pressure reached during this period was approximately 2260 psig. By 1035 CST, the plant had been stabilized in Mode 3 and Unit Operating Procedure 12006-C, "Unit Cooldown to Cold Shutdown," was entered.

Abnormalities in the operation of certain pieces of equipment occurred following the reactor trip but had no impact on the ability to shut down the reactor and maintain it in a safe shutdown condition. These abnormalities included the discharge valve for Main Feedwater Pump (MFP) A which tripped on thermal overload and failed to close, dual position indication which was observed for Main Feedwater Regulating Valve (MFRV) No. 3, and a knocking noise which was detected during coastdown of the main turbine.

D. CAUSE OF EVENT

(Note: See Licensee Event Report 50-424/1990-006 for a discussion of the causes and corrective actions associated with the initiating event of the truck operator backing into the support pole for the Unit 1 RAT A phase C "switcher" feeder line.)

As a result of this event, an investigation team was formed. The team found that the phase to ground fault disturbance, initiated when the truck backed into the 230kv support pole, was not of sufficient magnitude to cause the generator protective relay to actuate and the reactor trip to occur. Further investigation found that variable ratio current transformers which are located on the generator main output breakers and feed relay 587U1, were set at 3000 to 5 in accordance with the design drawing. However, the relay data sheet for 587U1 indicated that the correct tap setting should be 2000 to 5. Discussion with the Georgia Power Company Protection Engineering Department verified that the proper setting is 2000 to 5.

A root cause for the discrepancy between the current transformer tap settings specified on the design drawing and those specified by the relay data sheet was a miscommunication between design organizations. On 5-29-87, the relay data sheet for 587U1 was issued by the Protection Engineering Department to Nuclear Operations. On 8-24-87, a Field Change Record was issued by the Protection Engineering Department to the Power Generation Services Department to indicate that the design drawing, which specified the current transformer tap settings, should be revised to reflect the relay data sheet. However, the drawing change was not made by the Power Generation Services Department. In addition, a timely review as required by Procedure 55030-C, "Control and Use of Relaying Data Sheets," to verify that relay data sheet information had been properly implemented was not completed.

A contributing cause for this event was the failure to implement a Maintenance Work Order (MWO) in a timely manner. The MWO contained instructions to probe the main generator protective relays which had not been verified during Construction Acceptance Testing and thereby prove that each relay was receiving the proper voltage and current signals. At the time of this event, the MWO had been only partially implemented due to the trip hazard which would exist when performing the task.

The trip of the discharge valve for MFP A on thermal overload was investigated. Running currents were checked while stroking the

valve and the setpoints for the discharge pressure switch were checked. No problems were found for this valve.

Improper adjustment of the limit switches for MFRV No. 3 was identified as the cause for the dual position indication for that valve.

The cause for the knocking noise detected during turbine coastdown was found to be a "T Bar" for the phase angle probe on the main turbine which had come loose from the turbine shaft.

E. ANALYSIS OF EVENT

On the reactor trip, all control rods fully inserted and a Feedwater Isolation and an AFW actuation occurred per design. Diesel Generator 2B automatically started per design and tied to emergency bus 2BA03; thereby restoring power for Train B Class 1E loads. Diesel Generator 2B continued to power bus 2BA03 until RAT B was reenergized and bus 2BA03 was connected back to RAT B at 2003 CST on 3-20-90. Control room operators responded appropriately to initiate a manual MSLI to limit the reactor coolant system cooldown and to maintain pressurizer pressure and level following the reactor trip. Based on these considerations, there was no adverse effect on plant safety or on the health and safety of the public.

F. CORRECTIVE ACTIONS

1. The current transformer tap settings have been corrected for relay 587U1.

2. The MWO to probe the remaining unverified relays will be completed by 6-1-90.

3. The review required by Procedure 55030-C for Unit 2 protection relays will be completed by 7-15-90.

4. The limit switches for MFRV No. 3 have been adjusted.

5. The turbine "T Bar" has been secured.

G. ADDITIONAL INFORMATION

1. Failed Components Identification

None

2. Previous Similar Events

A similar event occurred for Vogtle Unit 1 on 6-3-87 (reference LER 50-424/1987-030) when a generator secondary differential relay energized causing a generator trip, turbine trip, and a reactor trip. This prior event occurred due to a fault on a 230kv transmission line and similarly involved a failure to properly set up current transformers located on the generator main output breakers. However, the root cause for the prior event was different since it involved a failure to remove vendor shipping grounds installed on the secondary windings of the current transformers.

3. Energy Industry Identification System Codes:

Emergency Onsite Power Supply System - EK

Main Generator Output Power System - EL

Main Feedwater System - SJ

Reactor Coolant System - AB

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April 19, 1990

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Senior Vice President
Nuclear Operations
ELV-01528
0335

Docket No. 50-425

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Gentlemen:

VOGTLE ELECTRIC GENERATING PLANT
LICENSEE EVENT REPORT
UNIT 2 REACTOR TRIP FROM UNIT 1 RESERVE
AUXILIARY TRANSFORMER FEEDER LINE FAULT

In accordance with 10 CFR 50.73, Georgia Power Company hereby submits the enclosed report related to an event which occurred on March 20, 1990.

Sincerely,

W.G. Hairston, III

WGH,III/NJS/gm

Enclosure: LER 50-425/1990-002

xc: Georgia Power Company
Mr. C.K. McCoy
Mr. G. Bockhold, Jr.
Mr. R. M. Odom
Mr. P. D. Rushton
NORMS

U.S. Nuclear Regulatory Commission
Mr. S.D. Ebneter, Regional Administrator
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Mr. R.F. Aiello, Senior Resident Inspector, Vogtle

*** END OF DOCUMENT ***